

WE CLAIM:

1. A process for preparation of nutritionally upgraded oilseed meals, which are protein and lipid-rich and have a reduced fibre content, and plant oils from oilseeds suitable for use in fish or other non-human animal diets or human foods comprising the steps of:
 - providing a source of oilseed;
 - subjecting said oilseed to heat treatment to substantially reduce the concentration of at least some antinutritional components normally present in said oilseed to obtain heat-treated seed;
 - dehulling said heat-treated seed to produce a meat fraction, a hull fraction or a mixture thereof; and
 - cold pressing said meat fraction or said mixture to yield said plant oils and said protein and lipid-rich meals .
2. A process for preparation of nutritionally upgraded oilseed meals, which are protein and lipid-rich and have a reduced fibre content, and plant oils from oilseeds for use in fish or other non-human animal diets or human foods comprising the steps of:
 - providing a source of oilseed;
 - subjecting said oilseed to heat treatment to substantially reduce the concentration of at least some antinutritional components normally present in said oilseed to obtain heat-treated particulate seed;
 - providing a source of unhydrolyzed animal offal;
 - blending said heat-treated seed in particulate form with said animal offal, and if required water together with an antioxidant, to form a mixture thereof;
 - cooking said mixture under conditions selected to substantially improve protein digestibility, and substantially free cellular water present in said animal offal, as well as to facilitate separation of protein from the lipid in said animal offal and said oilseeds to obtain a cooked mixture; and

- separating said cooked mixture into a stickwater fraction, a moisture containing protein-rich fraction, and an animal feed grade oil fraction.

3. A process according to claim 1, for the preparation of protein concentrates and lipid sources from co-processing of animal offal with oilseed for use in fish or other non-human animal feeds, wherein the cold pressing step of said oilseed fraction is carried out so as to substantially reduce the particle size of said oilseed fraction to yield a high value human grade oil and protein and lipid-rich meals with reduced fibre content; said process comprising the further steps of:
 - providing a source of unhydrolyzed animal offal;
 - blending said protein and lipid-rich meal with said animal offal, and if required water together with an antioxidant, to form a blended mixture thereof;
 - cooking said blended mixture under conditions selected to substantially improve protein digestibility, and substantially free cellular water present in said animal offal, as well as to facilitate separation of protein from the lipid in said animal offal and said oilseeds to obtain a cooked mixture; and
 - separating said cooked mixture into a stickwater fraction, a moisture containing protein-rich fraction, and an animal feed grade oil fraction.
4. A process for preparation of protein concentrates and lipid sources from co-processing of animal offal with oilseeds for use in fish or other non-human animal diets comprising the steps of:
 - providing a source of oilseed;
 - cold pressing said oilseed under conditions to substantially reduce particle size of said oilseed and obtain pressed raw seeds;
 - providing a source of unhydrolyzed animal offal;
 - blending said pressed raw seeds with said animal offal, and if required water together with an antioxidant, to produce a mixture thereof;
 - cooking said mixture under conditions to substantially improve protein

digestibility, and substantially free cellular water present in said animal offal and facilitate separation of protein from the lipid in said animal offal and said oilseed to obtain a cooked mixture; and

- separating said cooked mixture into a stickwater fraction, a moisture containing protein-rich fraction, and an animal feed grade oil fraction.

5. A process as defined in claim 4, for preparation of protein concentrates and lipid sources from the co-processing of animal offal with oilseeds for use in fish or other non-human animal diets comprising the steps of:

- providing a source of oilseed;
- drying said oilseed to produce a dried seed;
- dehulling said dried seed to produce a meat fraction, a hull fraction or a mixture thereof;
- cold pressing said oilseed meat fraction under conditions selected to substantially reduce particle size of said meat or mixture to yield a high value human grade oil and protein and lipid-rich meals with reduced fibre content;
- providing a source of unhydrolyzed animal offal;
- blending said protein and lipid-rich meals with said animal offal to form a blended mixture thereof;
- cooking said blended mixture under conditions selected to substantially improve protein digestibility, substantially free cellular water present in said animal offal and facilitate separation of protein from the lipid in said animal offal and said oilseeds to obtain a cooked mixture; and
- separating said cooked mixture into a stickwater fraction, a moisture containing protein-rich fraction, and an animal feed grade oil fraction.

6. A process for producing a protein concentrate for use in animal and aquafeeds comprising the steps of:

- providing a source of oilseed;
- drying said oilseed to reduce its moisture content to below about 10%